

## Techniques of Programming

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### Policy Note

2/24/79 9:41 am jim trueblood / pso / unidel

"Techniques of Programming" is the place for:

- ♦ asking about TUTOR commands
- ♦ discussing TUTOR concepts
- ♦ asking for programming help in TUTOR
- ♦ bringing to light TUTOR quirks and errors
- ♦ discussing any other programming language
- ♦ discussing programming methodology

For UDPLATO classification purposes, this is a "developmental" file. Access is essentially unrestricted, and everyone is invited to participate.

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----- Note 1 nonrigid format

3/7/80 8:20 pm b williams / udps / unidel

I have just read two notes indicating that one of the main reasons for not allowing access to things is the problem of changing format and thereby making lessons that depend on that format unuseable.

Is this problem unsolvable or are the people who write these system lessons just not willing to take the time and make the effort required to do something that sophisticated?

How difficult would it be to implement and use dynamic database structures (I'm not sure thats what they would be called)?

----- Response 1 of 8

3/7/80 8:32 pm jim trueblood / pso / unidel

Much of what you're talking about, if I understand you correctly, is done in lesson define sets, isn't it? So while they could make the behavior of their lessons very tolerant of physical format changes, they couldn't do anything to keep users from writing lessons which would become obsolete.

Do you have structures in mind which would make user lessons fairly immune to database format changes?

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----- Response 2 of 8

3/7/80 11:38 pm dave tall / udcc / unidel

The only way this can ever be done is to give all users of a database "access routines" that they can use to select and extract whatever data they need. These, then, can be considered to be black boxes that will return data after receiving certain input. Any time you let a user anywhere near physical structure, you are casting database structure in iron (or dollars, actually). Allowing someone to know where note titles are stored in the note common would be a shining example of this.

----- Response 3 of 8

3/8/80 12:44 pm keith / pso / unidel

This is one reason new command sets (such as the nameset and group records handling commands) are developed. Such work, however, is lengthy and expensive, and is usually undertaken only when it is likely to benefit a large number of users or result in a significant improvement in system efficiency.

----- Response 4 of 8

3/10/80 2:04 am b williams / udps / unidel

I mean, lets take notesfiles for example.  
Why couldn't they have as the first few variables of the common:



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1. the number of variables per note in the index
  2. which of these is the note title
  3. which of these is the date
- etc.

In other words, all lessons that would access this database would use defines based on these variables (they would use no constants).

----- Response 5 of 8

3/10/80 12:39 pm joe maia / udplato / unidel

Because the way notesfiles are implemented would no longer be transparent to the user. You need support routines or new commands in TUTOR that can access the information.

With support routines you could -use- code that could access the information without you having to know how the data is set up. For example, the following routines could be used for notesfiles:

```
unit    titles
        (to store a list of note titles in a predetermined
        buffer)
```

```
unit    readnote(main,resp)
        (to store main note number "main", response number
        "resp" [with "resp"=0 referencing the main note]
        in a predetermined buffer.)
```

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And doing the above takes time; which the people responsible for these changes don't have much of (especially for something as little needed as this).

----- Response 6 of 8

3/10/80 12:52 pm dave tall / udcc / unidel

The key word is "transparent". The idea of information hiding is simply to hide any and every detail of physical implementation from the end users. Allowing you to index into the common would tell you that it is stored in a common, and in a hierarchical form. Change it to a nameset, or to a tree structure or hash table, and your program stops working. The solution is to make all users of the database use "black box" routines which return to them whatever data they ask them for (providing access is permitted to that user). This way, the physical implementation can be changed as radically as desired, and no user programs will ever stop working. The access routines themselves (or more likely, the lowest level of access routine in the system hierarchy) are the only routines that have any idea of physical implementation, and the only things that have to be changed.

----- Response 7 of 8

3/15/80 4:28 am b williams / udps / unidel

Dear Mr. Tall,

Are you saying, then, that computer systems are

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inherently suited to be run by a small number of "experts" and that the user population is forever destined to bow to their every whim. That on this and any other computer we are to sit patiently waiting for the people in power to release to our open arms and gaping, hungry mouths their next access routine. And then to overwhelm them with words of appreciation and chocolate-chip cookies which we have toiled for hours to make in the steaming kitchen.

Is this the way it is to be? How sad that the common man must always loose out in the name of efficiency.

Your friend  
Ben

----- Response 8 of 8

3/16/80 5:38 pm dave tall / udcc / unidel

No, Ben, nowhere did I say that. Specifically, I didn't say WHO should write the access routines, only that there should be a centralized method of accessing widely-used data, and that the routines should be implemented with certain principles of software design in mind.



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----- Note    2    references

3/10/80    10:28 am    joe maia / udplato / unidel  
Here are a few good references on "programming methodology"  
(put in here by request):

"Current Trends in Programming Methodology"  
Vol.s I to IV or V.

Editor: Raymond T. Yeh (Vol. I at least)  
Pub.: Prentice Hall

"Software Engineering"

Editor: F.L. Bauer  
Pub.: Springer-Verlag, N.Y.

"Research Directions in Software Technology"

Editor: Peter Wegner  
Pub.: MIT Press

Morris Library should have most, if not all, of the  
above references. They might not have Bauer's book.

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----- Note 3 formok

3/10/80 5:06 pm m gilbert / udauth / unidel

The following code is used in lesson che19:

```
define student
  x=v1;y=v2
  lmtd(zz,yy) = ((zz+.0013) -yy) / [ln((zz+.0013)/yy)]
*      log mean temperature difference function for
*      the students to use.
define mine,student
```

At the arrows where the student is expected to answer a question that includes the lmtd function, PLATO occasionally judges the expression as too complicated to evaluate. However, reentering the answer by pressing shift-EDIT twice is judged OK. As far as I can tell, the too complicated message occurs on a random basis and not very often (just often enough to irk a student who has entered a long complicated expression). Is there a problem with formok or do I just need to change the formok message to something like "system error: reenter expression again".

----- Response 1 of 2

3/11/80 12:09 pm c burson / faa / unidel

If you are using a -store- command you may very well be running into the same problem I found several months ago.



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There is an error in the `-store-` command such that you can be auto-broken after the expression is compiled and stored but before `-judged-` is set -- in this case your variable may or may not have the correct result, but `-formok-` will usually be 16 (although I have seen -1) and you will get a "no" judgement (`judged=1`).

This has been reported to CDC; it remains to be seen if Cut 20 will be corrected.

----- Response 2 of 2

3/13/80 12:34 pm dan williams / udplato / unidel

If it's an end-of-timeslice that does it, it ought to help to do a `-return-` just before it, which forces it to get the timeslice switch over with. I've had great success with getting autobreaks not to happen at certain times, in this way.

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----- Note 4 bandit

3/10/80 7:26 pm stabosz / udplato / unidel

Does anyone know of a lesson that contains a simulation  
of a slot machine?

----- Response 1 of 4

3/10/80 8:14 pm shawn hart / udauth / unidel

There is a lesson called \*slots\* by Jeff Davis.

Shawn.

----- Response 2 of 4

3/14/80 5:52 pm lynch / udplato / unidel

An excellent slot machine was written by Peter Mattijsen  
and Markus van Dijk on the Brussels system. It used lots  
of special characters and 8080 code to animate the  
spinning dials. I believe it kept of record of the  
biggest winners and was very popular with the users of  
that system. It is no longer available now, as Peter and  
and Markus have disabled it because of the impending  
demise of the ppt commands.

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----- Response 3 of 4

3/19/80 11:51 am stabosz / udplato / unidel

Thanks, both of you. Jeff's lesson gave me an idea of what I might want to do. I would've liked to have seen this other one!

----- Response 4 of 4

4/9/80 12:07 pm peter mattijsen / visitors / unidel

\*blush\*

Once CDC has decided to make it possible for ordinary users to use 8080/Z80 code in the terminal, i will try to get it published. Hopefully you will then be able to look at it.

Just a small figure: During the time statistics over the lesson were collected ( 1st april 1979/ mid nov 1979 ), the slot machine had been used over 10 hours a day, 7 days a week, giving a usage total of about 3000 hours. During that time, the brusselssystem went from 30 to 50 users.

Peter Mattijsen



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----- Note 5 "save buffer"

3/10/80 8:38 pm steve cox / udps / unidel

What determines if what is in your "save buffer" is zeroed or not? On various occasions I have been writing a note, "S"aved what I had typed, and left without sending (to check out information, etc.) and when I returned and "IS"ed, there was nothing there. Also, is there any way (in TUTOR) to read/write to a "save buffer"?

----- Response 1 of 7

3/10/80 10:09 pm walt smith / udauth / unidel  
as a general rule of thumb, shift-stop zaps your save buffer  
the only exception to this is when you leave a notesfile  
via shift-stop.

i think it would really be usefull to read & write  
to your save buffer, and see no reason why they cannot let  
you do this. currently, it can't be done.

if they don't let you access the real save buffer,  
i think a good comprimise is to have =notesedit= use the  
actual system save buffer.

----- Response 2 of 7

3/10/80 10:13 pm jessica / pso / unidel  
One problem is that there is no "save buffer" as such.  
It's only some storage that is shared by several system

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lessons.

----- Response 3 of 7

3/11/80 8:58 am tripp / udps / unidel

Pressing SHIFT-STOP does not delete the buffer. It is preserved between some system lessons, such as the editor, "notes" and "pnotes". The contents of the buffer are lost if you run another lesson (for example, "user" or "aids").

----- Response 4 of 7

3/11/80 2:07 pm jim trueblood / pso / unidel

Some or all of the special editors zap it, being separate lessons in themselves. For instance, editing common will destroy your save buffer.

----- Response 5 of 7

4/10/80 2:14 pm baum / udps / unidel

Is there some sort of second "save buffer" that is used by the P-notes driver and such? For instance, I can 'S'ave a note, write more notes, send copies of notes ("Press SHIFT LAB to send a copy of last note" I think it says), and as long as I don't press SHIFT STOP, I can still 'I'nsert what I had 'S'aved earlier...

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----- Response 6 of 7

4/10/80 3:22 pm jessica / pso / unidel

If you have -S-aved a note, it overwrites what was  
in your save buffer as far as I know. You can -F-orward  
notes and -C-opy notes without affecting your save buffer.

----- Response 7 of 7

4/11/80 12:01 pm jim trueblood / pso / unidel

And SHIFT-STOP shouldn't affect it. I "S"ave notes  
and then SHIFT-STOP from the notes system to insert them in  
a TUTOR file all the time.



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----- Note 6 indent reg only

3/13/80 9:56 am payne / udps / unidel  
Why can't an -end lesson- be indented? The condenser  
tells me that only regular commands can be indented.  
What if I want my lesson to end only if some flag is  
set???

Rich Payne

----- Response 1 of 3

3/13/80 11:03 am jessica / pso / unidel  
The way to handle it is to -do- a unit containing the  
-end lesson- command. Then the lesson will end when  
the current main unit is over, and the student presses  
NEXT.

----- Response 2 of 3

3/13/80 12:22 pm payne / udps / unidel  
Thanks Jessica,  
I knew that there was a nice way to do it.  
Rich

----- Response 3 of 3

3/13/80 2:45 pm tripp / udps / unidel  
Well, I would hardly call it "nice". I prefer "kludge".

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----- Note 7 pptouts!?

3/13/80 4:09 pm marks / udperuse / unidel

Someone once told me of pptout commands that fill the screen  
if anyone knows them could he please leave them here?

Thanks

----- Response 1 of 11

3/13/80 4:18 pm jay green / udps / unidel

I have them.

\*\*\*\*\*

```
define at(x,y)=o10000000 $union$ (x$cls$9) $union$ y
pptout o1000042
pptout at(x,y) $$ bottm left corner
pptout at(x,y) $$ top right corner
*****
```

I think this is what the -fill- command will do

jay

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----- Response 2 of 11

3/15/80 6:26 pm dan williams / udplato / unidel  
Note: It harms a plasma panel to have it filled.

----- Response 3 of 11

3/17/80 5:12 pm andrews / udcc / unidel  
How does it harm a plasma panel to light up its dots?

----- Response 4 of 11

3/17/80 5:18 pm houghton / udps / unidel  
it puts a strain on the power supply...leave the whole  
screen lit for a while and I think it starts dying...

----- Response 5 of 11

3/17/80 6:01 pm tripp / udps / unidel  
Can ISTs get burn in?

----- Response 6 of 11

3/17/80 11:29 pm andrews / udcc / unidel  
After the dots are lit on a plasma panel, they should stay  
lit without additional stimulus beyond the normal power to  
the panel.

Tanner!



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----- Response 7 of 11

3/18/80 1:26 am jim trueblood / pso / unidel

If it weren't for the deleterious effect, I'd tell you to try it some time, Tanner. I once saw a screen to which this had happened. It had reached the point at which if you lighted the whole thing, after about 15 seconds, it would begin to look as though someone were throwing ink at it -- splotches of dots all over the screen would just die.

----- Response 8 of 11

3/18/80 8:42 am tweed / udps / unidel

You see, the panel voltage remains the same, but a lit dot requires more current from the power supply.

Actually the main concern is not for the power supply, but for the screen itself. The ionized neon of a lit dot tends to eat away the clear electrodes that are plated on the glass plates of the panel. That is why the lifetime of a panel in normal use is about four years maximum. When you light up the entire panel, this "erosion" effect is greatly accelerated. Once the electrodes are eaten away enough, they can't carry enough current to keep a dot lit, so it tends to turn itself off.

The manufacturers of the Carroll terminal have recognized this phenomenon. When you first turn on an ASCII Carroll, the entire screen lights up. If you don't press NEXT, LAB,

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or BACK within a certain amount of time, the terminal starts "exercising" the screen, writing and erasing random blocks, to keep from burning it up.

----- Response 9 of 11

3/19/80 7:41 pm silver / p / unidel

Dave, is there an effect related to heat? A panel with lots of dots on gets noticeably warm!

----- Response 10 of 11

3/21/80 9:37 am tweed / udps / unidel

Heat is just a byproduct, the main effect is from ionized neon reacting with the coating on the gas. Normally neon is considered to be a "noble" gas, not participating in chemical reactions, but here we have neon in a rather excited state.

----- Response 11 of 11

3/23/80 11:00 pm k warren / udauth / unidel

Oh, yes. There is no longer any need for you to use a -pptout- command anymore. (At least not on intelligent terminals.) You can now use the -fill- command with blank tags. The same things as said above still apply, though; in other words, don't leave it there for more than a second or so. Oh, by the way, Dan, an IST can burn in.

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Bye for now,  
Ken Warren



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----- Note 8 PI?

3/13/80 4:48 pm barnes / udhs / unidel

I am making a program involving pi. Does anyone know how to change the formula into a TUTOR program? I wish to display pi for as many digits as the student wants. For the heck of it: How many digits can you recite pi to. Please include pi to as many digits as you know it in your responses. Thanx.

Tom

----- Response 1 of 9

3/13/80 5:21 pm tripp / udps / unidel

3.14159265358979323846264338327950+

----- Response 2 of 9

3/14/80 10:35 am graper / udps / unidel

Dear Mr. Barnes:

One point from this seasoned programmer: Never, EVER write a program to have the computer determine the absolute value of pi. It will become hopelessly involved in the complication and never come up. Only use it when an evil spirit possesses the computer and you have to get it out.

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Your Friend,  
Dr. Gräper

----- Response 3 of 9

3/14/80 2:55 pm barnes / udhs / unidel

I don't want the absolute value (there is none), but  
I want to have a program to determine it to 50+ digits.  
Would PLATO be able to handle it? Hmmm ... we'll see.

Sharkov

----- Response 4 of 9

3/14/80 2:59 pm marks / udps / unidel

PLATO by its very nature is a very poor computer to use  
for this sort of calculation. I once wrote a program to  
calculate pi the easiest way and the precesion vs. time  
ratio increses exponentialy. After 13 digits you are  
going to be running a program for a few years.

P.S. one more digit ...83279502...

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----- Response 5 of 9

3/14/80 4:36 pm fortner / udperuse / unidel  
from memory:

3.14159265358979323846264338327950288419716939937510

----- Response 6 of 9

3/14/80 5:04 pm joe maia / udplato / unidel  
The easiest way to do this is not to calculate the value  
but to store the value (in common or student variables,  
whatever you want) as a character string and just -showa-  
the appropriate number of digits. With 50+ digits it would  
only take up 5 or 6 words to store the string (10 characters  
per word).

----- Response 7 of 9

3/21/80 12:30 pm ulery / udauth / unidel  
3.1415926535897932384626433832795028841971693993751058209  
749445923078164062862089986280348253421170679821480865132  
8230664709384460955058223172535940812848111745028410270193852110555964462294895493038196.

BTU

( Hope there're no typos - you might take a look at  
Petr Beckmann's The History of Pi - it should still

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be available in Morris, otherwise it's out in paperback. I think David's Bookshelf carries it.)

Also, pi does have an exact value! There's just no finite decimal representation for it, i.e. it's not rational.

----- Response 8 of 9

3/24/80 11:42 am b williams / udps / unidel  
How's that for a computer! Ask PLATO for the value of pi  
and it gives you it to 200 places in only 4 iterations!

----- Response 9 of 9

3/24/80 11:52 am davis / udps / unidel  
Remember its the Cyber and not PLATO



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----- Note 9 bad practices

3/13/80 5:29 pm dave tall / udcc / unidel  
cannounce / unidel 3/12/80 11:58 pm vollmer / s / cerl  
The automatic checkpointing of student and instructor  
records may now be turned on and off with the -checkpt-  
command:

checkpt on	\$\$	allow automatic checkpointing
checkpt -1	\$\$	-1 is same as "on"
checkpt off	\$\$	inhibit automatic checkpointing
checkpt 0	\$\$	0 is same as "off"

\*\*\*\*\*

Why do they insist on making nice gestures like  
"on" and "off", and then ruining it by allowing numbers  
that could conceivably change?

----- Response 1 of 2

3/13/80 7:13 pm anderer / udplato / unidel  
You know they'll never change - no matter how good a reason  
might exist to do it.

----- Response 2 of 2

3/13/80 10:04 pm dave tall / udcc / unidel  
That's not even exactly the point, if you're talking  
about the numbers and not the implementors.

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----- Note 10 finds or search

3/13/80 5:50 pm shawn hart / udauth / unidel

Which is faster, -finds- or -search-? I have a list of names that have a number associated with them, and it is sorted by the numerical value. I want the user to be able to input either the name or the number, and I don't know which I should look for first.

Shawn.

----- Response 1 of 7

3/13/80 5:56 pm fortner / udperuse / unidel  
finds is much, much, much faster. It is a binary chop search, which goes up as  $\ln(n)$ . A search command not only is a character by character match, but it is a linear search, so it goes as  $n$ .

For example, for 1024 entries, the search would have to make 1024 comparisons, whereas the finds would make only 10 comparisons.

Just out of curiosity, why would you be using the search command instead of a find or findall command?

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----- Response 2 of 7

3/14/80 10:09 am joe maia / udplato / unidel  
=finds= for the number entries and =search= for the names?

Use =finds= for the sorted numbers and =find= to search  
for the unsorted names. You can tell if the person has  
typed a number or a character string at an -arrow-....

Something like the following would do it:

```
arrow  xx,yy
c
store  number
judge  continue $$ does this if no number entered
ansv   <midpoint>,<halfrange> $$ to detect the numbers
c  ex.: if you want to accept any number from 1 to 30 then
c        the <midpoint> is 15.5 and the <halfrange> is 14.5.
c        ... process the =number=
storea string
ok
c        ... process the =string=
endarrow
```

----- Response 3 of 7

3/14/80 1:13 pm shawn hart / udauth / unidel  
prognotes/unidel 3/13/80 5:56 pm fortner/udperuse/unidel  
Just out of curiosity, why would you be using the search



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command instead of a find or findall command?

\*\*\*\*\*

Sorry, I thought -find- and -findall- could only be used with a sorted list. After checking Aids, I see they do not.

Will the ansv judge "no" if the number is less than 15.5-14.5, or greater than 15.5+14.5, or will it continue to the -store string- line? Also, thanks for the help!

Shawn.

----- Response 4 of 7

3/14/80 3:01 pm marks / udps / unidel  
Also a -storen- will pull out the numbers from a response.

----- Response 5 of 7

3/14/80 5:06 pm joe maia / udplato / unidel  
(That is why I used a -store- and not a -storen-.)

Yes, "judge" state will continue and the string will be stored in =string= and then the -ok- will change back to "normal" state.



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----- Response 6 of 7

3/19/80 7:47 pm silver / p / unidel  
ansv <midpoint>,<halfrange> \$\$ to detect the numbers  
c ex.: if you want to accept any number from 1 to 30 then  
c the <midpoint> is 15.5 and the <halfrange> is 14.5.  
////

Or if the total range is stored in variable "range"

ansv (range+1)/2, (range-1)/2  
\*\*In central TUTOR, "range" can be an integer variable,  
\*\*because the CPU does calculations in floating point.

----- Response 7 of 7

3/20/80 1:51 pm lynch / udplato / unidel  
Or even more general:

ansv (top+bottom)/2, (top-bottom)/2

where bottom is the lowest number to be accepted and top the  
highest.

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----- Note 11 -writec- bug?

3/16/80 5:05 pm tripp / udps / unidel

There seems to be an inconsistency in the way -writec- works. Shouldn't the following two sections of code produce the same display?

```
at      1010
write   first line
write                                     $$ (blank tag -write-, not a CR)
      second line
*
at      2010
write   first line
writec  -1,                             $$ (no CR here either)
      second line
```

----- Response 1 of 1

3/16/80 7:14 pm dan williams / udplato / unidel

I'd say you're right, but I can see why they did it this way. People who don't think about it at all just want to get the tag on the next line, and the comma looks better at the end of the previous line. Several times I've thought, oh darn, this is going to put it a line lower, and have been relieved when it didn't.

In fact, if it were consistent, most -writec-s would end up looking funny like this:

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```
writeln val,negative  
        ,zero  
        ,one  
        ,two  
        ,three  
        ,
```

and furthermore, putting it this way would leave \*where\* a line lower than you want it.

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----- Note 12 reading blocks

3/18/80 2:28 pm brian dear / udauth / unidel  
When -attach-ing a TUTOR file, is it possible to -datain-  
the contents of a block, or does one have to stick with  
-getline-?

----- Response 1 of 6

3/18/80 3:19 pm davis / udps / unidel  
I believe that you must use a -getline-

----- Response 2 of 6

3/18/80 3:56 pm anderer / udplato / unidel  
Correct.

----- Response 3 of 6

3/18/80 5:13 pm andrews / udoc / unidel  
Anyoe know of a way to write in these blocks?  
Or are we stuck with the system editor forever?

----- Response 4 of 6

3/18/80 5:16 pm jessica / pso / unidel  
I don't know about forever, but the TUTOR editor is  
the way to write in TUTOR blocks. One rather  
complex alternative is to write your own editor that



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works with common blocks, and then use the option to convert common to source.

----- Response 5 of 6

3/18/80 5:52 pm walt smith / udauth / unidel  
are there any serious plans to allow one to write to a  
tutor file in the future? i think this would be a great  
feature.

\*////

ps. why do people capititalize the word "tutor"  
i think i can see a reason for capping the first letter,  
but why the whole word?

----- Response 6 of 6

3/18/80 8:03 pm jim trueblood / pso / unidel  
It's not expected that users will be able to write  
source blocks until TUTOR files become namesets. I have  
very little idea of the timetable on that, except that it  
won't be soon.

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----- Note 13 SD whine

3/18/80 2:39 pm b williams / udps / unidel  
I have created a display in SD. Now I want to convert it  
to relative commands with the rorigin at the center of the  
display. Well the stupid thing just doesn't want to  
generate negative numbers as far as I can tell!! GRRRRRRRRR

----- Response 1 of 8

3/18/80 3:20 pm davis / udps / unidel  
Are you sure? I've seen it have negative tags in a plain  
-at-.

----- Response 2 of 8

3/18/80 4:13 pm b williams / udps / unidel  
Well it sure doesn't seem to work with -draw-s.

----- Response 3 of 8

3/18/80 5:01 pm joe maia / udplato / unidel  
What you need to do is put an -rorigin- at the beginning  
of the code you want to convert in SD and THEN convert;  
all the absolute graphics commands will be converted  
relative to that first -rorigin-.

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----- Response 4 of 8

3/18/80 8:09 pm jim trueblood / pso / unidel

I can't figure out what the problem would be, Ben.  
The "K" option is supposed to insert its own -rorigin- command wherever you have the cursor when you press "K", and as far as I can tell, it does.

If you narrow it down to something in your code which makes it screw up, let us know.

----- Response 5 of 8

3/19/80 10:20 am b williams / udps / unidel

THANKS! The "K" did the trick! I guess I never noticed it in the jungle of options.

----- Response 6 of 8

3/19/80 12:58 pm dan williams / udplato / unidel

I've looked for that option everywhere a couple of times; how do you goddamn find it if you don't know it's "K"?

----- Response 7 of 8

3/19/80 1:11 pm davis / udps / unidel

In SD press SHIFT-HELP then type 'convert'.

## Techniques of Programming

----- Response 8 of 8

3/19/80 2:32 pm jim trueblood / pso / unidel  
. . . or type "list" to see the list of options.



## Techniques of Programming

----- Note 14 RPG-2

3/18/80 5:48 pm steve cox / udps / unidel

Does anyone know where I can buy a manual for the language RPG-2? I was interested in learning it and didn't know where I could get one. Also, does anyone know about a compiler for RPG-2 here at Delaware and if there is one, how could I get access to it?

----- Response 1 of 5

3/18/80 5:56 pm dave tall / udcc / unidel

Ken Weiss at Smith Hall (8441) is the man to talk to about RPG.

----- Response 2 of 5

3/19/80 2:56 pm marks / udps / unidel

What is RPG-2?

----- Response 3 of 5

3/19/80 6:10 pm gellens / udcc / unidel

There is, I think, an RPG compiler on the Burroughs.

## Techniques of Programming

----- Response 4 of 5

3/19/88 6:39 pm steve cox / udps / unidel

Cheinan,

RPG-2 is a (somewhat kludgy) computer language used for buisness.

Thanks all! I'll look into it.

Steve

----- Response 5 of 5

3/19/88 8:06 pm dave tall / udcc / unidel

They sometimes have RPG manuals at the bookstore, too. I think they teach it at Deltek, so Ken might be able to tell you where you can get a manual nearby, if the bookstore doesn't have any.

## Techniques of Programming

----- Note 15 trap does work  
\*\*\* I don't know what he's talking about either. \*\*\*

3/20/88 3:19 pm jim trueblood / pso / unidel

Lesson 'mtutor' contains a working example of  
the -trap- command in the first block, named "trapping".  
Since I'm using the file for other things, it isn't  
condensable; feel free to copy it via the "S" option,  
though.

## Techniques of Programming

----- Note 16 COMPASS

3/21/80 12:10 pm brian dear / udauth / unidel  
Anyone know if there are any on-line lessons on the COMPASS  
language? Or if there's anything in the Palace Library?

----- Response 1 of 3

3/21/80 12:33 pm carrera / ag / unidel

Try looking under 'cscat' or #cmpcpu.

----- Response 2 of 3

3/21/80 4:41 pm marks / udps / unidel  
Look at the catalog of published courseware. They have a  
nice group of compass lessons. They don't tell you  
how to use it on PLATO though, only on an Cyber machine itself rather than on a Cyber  
h PLATO on it.  
It doesn't cover all of the language either.

----- Response 3 of 3

3/24/80 10:57 am joe maia / udplato / unidel  
These lessons can be much easier found by looking in  
"cscat"; they are in a category listed on the second  
page of categories.



## Techniques of Programming

----- Note 17 -fill-

3/23/80 12:41 pm brian dear / udauth / unidel  
The -fill- seems to be doing some things to the display  
to make it appear as if I'm running =replay=, or there's  
a -trap-ped display being shown. I tried a

```
mode      erase
fill      1,480;509,1
fill      1,480;509,1
```

and pressed NEXT while it ran; it jumped to the AUTHOR mode  
page and the display of the AUTHOR MODE page was so fast  
I thought it was *jtutor* or ppt. How'd -fill- manage to  
do that? (And there are no programs in the terminal; I  
pressed the RESET button, and this phenomenon is consistent  
every time I run the lesson).

----- Response 1 of 3

3/23/80 1:19 pm brian dear / udauth / unidel  
I just tried it again, this time pressing NEXT quickly  
several times. Well, I got the ERROR light on, and the  
AUTHOR MODE display flashed by like in *jtutor*, and then  
I saw my lesson directory flash on as if lesson =edit=  
was *jtutor*. Is this supposed to be what -fill- does?

## Techniques of Programming

----- Response 2 of 3

3/23/80 2:02 pm andrews / udoc / unidel

I think it's just the delay from the time it takes for a fill to be accomplished; the outputt gets queued up for you in the terminal.

----- Response 3 of 3

3/23/80 5:07 pm jim trueblood / pso / unidel

Right. You can see a similar phenomenon when you do a large erase on an IST-1 followed immediately by a bunch of other display stuff. The other stuff comes during the erase and thus can be almost instantaneously shown when the erase finishes.

## Techniques of Programming

----- Note 18 <m,i> keycode

3/24/80 10:11 pm c burson / faa / unidel  
As you can read in pbnotes, <m,i> is a ways off...

In the mean time, does anyone know if there is a way to  
do a character-code <m,inverse> in a -write- statement?

----- Response 1 of 1

3/24/80 11:40 pm jim trueblood / pso / unidel  
\*sigh\* . . . there isn't.

## Techniques of Programming

----- Note 19 ds editor

3/25/80 5:51 am jim trueblood / pso / unidel

Anybody else notice the addition of hidden and hexadecimal display formats in the dataset editor? Or was I just missing it all along?

----- Response 1 of 2

3/25/80 7:25 pm walt smith / udauth / unidel

i am not familiar with the dataset editor, but you could always do this in the common & nameset editor.

\*////////

is that "shift-lab" for a simple calculator that displays in binary new. [in the common editor.]

walt

----- Response 2 of 2

3/26/80 12:19 pm jim trueblood / pso / unidel

Well, certainly not "always". The -showh- command only appeared the cut before this, I believe.



## Techniques of Programming

----- Note 20 Common usage

3/26/80 2:43 pm brooks cooley / newauth / unidel

Is it possible to use temporary and permanent common at different times in the lesson without losing the values in the temporary common? I tried this in my lesson, and I found that I can either use the permanent common or the temporary common but I can't go back and forth between them.

Brooks

----- Response 1 of 9

3/26/80 3:23 pm feurer / udps / unidel

As I understand it, the difference between permanent and temporary common is that permanent is read back to disk while temporary isn't. They both occupy the same ECS space and so are really the same common.

Please correct me if I'm wrong.

gary

----- Response 2 of 9

3/26/80 4:39 pm jim trueblood / pso / unidel

You're right. And there is no "executable" command for temporary common, meaning that it's impossible

## Techniques of Programming

to go back and forth because the common is already established before you finish condensing the lesson.

If you're using the `-common-` command rather than the `-commonx-` command for your permanent common, the same thing applies to it: it doesn't matter where in your lesson the command appears, because the common is established once and for all while condensing the lesson (before you ever start running in it, in other words).

----- Response 3 of 9

3/26/80 5:06 pm joe maia / udplato / unidel  
Sounds like you might be able to use storage. (The `-storage-` and `-stoload-` commands.)

You can have both storage and common in ECS. Storage is temporary and there is a separate amount of storage for each user of your lesson (unlike common which is the same for all users). You would need to load your storage yourself with the `-stoload-` command.

----- Response 4 of 9

3/26/80 5:58 pm walt smith / udauth / unidel  
i think a executable storage command would be really neat.

## Techniques of Programming

----- Response 5 of 9

3/27/80 8:43 am tripp / udps / unidel  
(Such a thing does exist in system lessons)

----- Response 6 of 9

3/27/80 10:04 am b williams / udps / unidel  
dan, that is what walt just said

----- Response 7 of 9

3/27/80 12:06 pm walt smith / udauth / unidel  
since it does exist, and since it would be useful,  
why don't they let all plato programs use it.

we don't need the maximum tag of 100,000 words  
that the system storage command has, just the executable  
part.

----- Response 8 of 9

3/27/80 12:33 pm tripp / udps / unidel  
Because it takes a lot of system overhead to execute.

----- Response 9 of 9

3/27/80 7:16 pm dave tall / udoc / unidel  
That's the same excuse they used for commonx.



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----- Note 21    bye ay

3/26/80    3:56 pm    dan williams / udplato / unidel  
One little-known effect of Cut 20 is that MICRO-y no longer produces a half-space like it used to. Mike Frank and I were just commenting on the funny French words in Touché with double y's in them, and it didn't dawn on me that those were the places I used ayay as a fake space that would be ignored by the parser and treat consecutive words as a single word.

It was a student who noticed it first. So much for using unreleased PLATO features!

We'll have to switch to FONT<blank char>FONT, looks like.

----- Response 1 of 7

3/26/80    4:11 pm    houghton / udps / unidel  
or use a\_ which is a real half-space...

----- Response 2 of 7

3/26/80    4:40 pm    jim trueblood / pso / unidel  
I never even knew about ay!



## Techniques of Programming

----- Response 3 of 7

3/26/80 7:23 pm dan williams / udplato / unidel  
No, □\_ has the \_ in it, which is what I was trying to avoid  
detecting. I don't mind; ♦x♦ takes less chars than □y□y  
anyway.

----- Response 4 of 7

4/10/80 2:30 pm baum / udps / unidel  
Actually, a □\_ will simply move current "where" four dots  
without plotting a thing. Same goes for □↑\_. Try it in  
mode inverse some time if you don't believe me.

----- Response 5 of 7

4/11/80 12:02 pm jim trueblood / pso / unidel  
But Dan's interest isn't in the plotting but in the  
judging. Just having the "\_" part of □\_ is apparently a  
problem in his context.

----- Response 6 of 7

4/11/80 12:30 pm m frank / udplato / unidel  
What Dan needs is something that looks like a space when  
it's printed and doesn't look like a space when it's being  
operated on.

## Techniques of Programming

----- Response 7 of 7

4/11/80 1:49 pm culley / unidel / unidel  
That's right--PLATO has to see it as a "letter", so that  
what is displayed as two words is read by the machine as  
just one.

## Techniques of Programming

----- Note 22 common length

3/26/80 7:47 pm steve cox / udps / unidel

Does anyone know what signifance the length part of the -common- tag has? I have a lesson and for sometime I've had a common statement with the length as 320 and the actual length of the common is 640! Does this only load the first 320 vars into ECS or what? I've never gotten an exc-error from this.

----- Response 1 of 3

3/27/80 9:36 am c burson / faa / unidel

Yes, it works the way you surmise.

----- Response 2 of 3

3/27/80 10:17 am garton / udplato / unidel

Steve, will your lesson remember what you stored in variable nc321 after you leave the lesson?

----- Response 3 of 3

3/28/80 6:19 pm marks / udps / unidel

Maybe it only swaps the first 320 words leaving you with temporary storage.

## Techniques of Programming

----- Note 23 -term-

3/27/80 12:02 pm b williams / udps / unidel  
Something I just noticed is that there is no way to have a conditional -term-. This is because -term- is a condense-time command, although this is not stated in AIDS.

For example, if I have

```
unit    test
if      0=1
.        term    test
endif
```

TERM-test will still go to unit test.

In fact, I just tried it and there is not even a condense-warning.

----- Response 1 of 1

3/27/80 4:18 pm lynch / udplato / unidel  
I have used this to get the effect you want:

```
unit    term
termop  test
goto    condition,x,q
* code to be executed when condition is true
```



## Techniques of Programming

If the condition is not true, it will look as though the TERM was ignored. For a TERM that jumps to a different page, you can do this:

```
unit    term
termop  test
jump    condition,test,x
*
unit    test
* etc.
```

## Techniques of Programming

----- Note 24 processor tech.

4/6/88 9:33 am keith / a / unidel

I heard from the people at the Sensory Assistance Center  
(Dept. of Justice, Washington) that Processor Technology  
has gone out of business.

Anyone have any more info?

----- Response 1 of 1

4/6/88 11:44 pm jim trueblood / pso / unidel

I think there may be some info in the archives of  
'micronotes' or 'pptnotes'. Try around the end of summer  
last year.

## Techniques of Programming

----- Note 25 formal specs

4/8/80 2:16 pm dave tall / udcc / unidel  
udnotes/unidel 4/8/80 10:09 am joe maia/udplato/unidel  
Abstract:

For years we have given lip service to hierarchical programming. Finally, languages such as Modula are emerging in which we can actually write hierarchically organized code. However, the potential which modular programming offers for reliably contracting large software systems will never be fully realized until we extend these languages to include formal specifications.

Refreshments: 4:30.

THIS IS TODAY.

\*\*\*\*\*

Do you agree with this proposal? In particular, what sorts of formal specifications should be required to be part of a program, what form should it take, and should the compiler attempt to enforce a relationship between it and the module's code?

## Techniques of Programming

----- Note 26 common help

4/9/80 11:35 pm gardner / newauth / unidel

Who could one contact if one wanted some help with a common? I know the basics, but I need some help in manipulating the data once I've got it.....

Thanks!

-Vickie-

----- Response 1 of 7

4/10/80 1:42 am silver / a / unidel

Have you tried -term- consult? At least a couple of the consultants had similar problems, along the way, and can offer both advice and sympathy.

----- Response 2 of 7

4/10/80 8:09 am jim trueblood / pso / unidel

I'm always glad to help people get comfortable with common and storage.

----- Response 3 of 7

4/10/80 9:22 am garton / udplato / unidel

And if you have a specific question when there is no consultant signed on, you can write a note in =psonotes.



## Techniques of Programming

----- Response 4 of 7

4/10/80 12:09 pm tripp / udps / unidel

Or ask your specific questions here.

----- Response 5 of 7

4/12/80 2:49 pm gardner / newauth / unidel

What I want to do is list the names I have stored in alphabetical order, or in order of the level the student is working at, or by scores, or by function, with the instructor given the choice when he/she first goes into the unit that displays the common. I don't want to sort them when I'm inserting them because right now I'm trying to keep track of who used the lesson last so that I know who to talk to if errors are found (did they have similar problems etc). Press lab from the third page of -udvickie- if you want to take a look at the way it stands now.

Thanks!

-Vickie-

p.s. I want help in enabling ME to understand what's going on, not getting someone to more or less do the writing for me....

## Techniques of Programming

----- Response 6 of 7

4/13/88 3:48 pm jessica / pso / unidel

Here's the basic plan of what you'll need to do:

Declare an area of storage variables the same length as your common is, and make a copy of the common in those storage variables. Then use the -sort- or -sorta- command (with the appropriate tags) to put the copy of the names in your storage into the order you'd like them displayed in. This doesn't affect common, of course, so the names are still there in the order they were originally stored in.

Then use the same display routines you're using for the common list on the list in storage.

Storage variables can be confusing, and using both common and storage at the same time can be tricky. Please contact a consultant or your TUTOR seminar leader if you want to try this approach (do read the AIDS section on storage variables first).

----- Response 7 of 7

4/15/88 7:04 pm gardner / newauth / unidel

Thanks!

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-Vickie-

## Techniques of Programming

----- Note 27 FORTRAN

4/10/80 2:34 pm marks / udps / unidel

Is it possible to submit a FORTRAN program or COMPASS code from a code file?

----- Response 1 of 4

4/10/80 4:44 pm joe maia / udplato / unidel

I believe you have to have a specific sign-on before you can submit "batch" jobs. Then you can assemble COMPASS and compile Pascal in batch mode (among other things of course). I don't know what other languages we have here though.

----- Response 2 of 4

4/11/80 9:49 am markham / udps / unidel

FTN, CDC's version of FORTRAN is available also.

----- Response 3 of 4

4/11/80 10:09 am andrews / udcc / unidel

So where do we sign up?



## Techniques of Programming

----- Response 4 of 4

4/11/80 11:53 am j wilson / p / unidel

Batch use is not supported as an available feature of our system, since our primary aim is to assure high-quality PLATO service. Other machines at the computing center can serve these needs well. If there is a special task related to one of our projects that should be considered for the CYBER, a proposal should be written by the faculty members involved to Fred Hofstetter.

## Techniques of Programming

----- Note 28 imode dont work

4/10/80 10:20 pm baum / udps / unidel

I am in the process of converting -galaxy- into an inter-terminal game, and I am using a common for communication between terminals. In the finish unit, I zero the words in the common that the player was using. Easy enough. I even added a check to see if the user's position in the common hadn't yet been chosen, in which case the entire finish unit is bypassed to avoid trying to access negative words in the common, etc. Everything works perfectly.

... From author mode. When I try to run galaxy through imode, I get an execution error in the finish unit. Every time. It's trying to access word 2047 or some such very large number. I even added a -zero n1,150- at the very beginning of the program, to no avail.

I tried running galaxy from REAL imode, using an instructor signon in group practice. The problem is, when I hit SHIFT-STOP for the finish unit, I ket kicked off PLATO entirely.

Every single cotton-pickin' time.

----- Response 1 of 5

4/11/80 12:30 pm jessica / pso / unidel

It seems unlikely that the type of signon used would cause the problem by itself. Was there anything

## Techniques of Programming

else different about the times you tested using "imode", such as the signon name or the number of simultaneous users? Could the common have started out with "garbage" in it from some previous use?

----- Response 2 of 5

4/11/80 1:07 pm baum / udps / unidel  
Sorry, but 'no' to all questions. It ran fine from author mode (baum/udperuse) and gave the error from imode (baum/udperuse) as well as from real imode (baum/practice). I was the only user each time, and I even zeroed the common each time. The error is an index error... The finish unit just calcs x(you)+0 (along with similar lines) where x is my array in the common, and you is a lesson variable (not common). The execution error says I'm referencing some 2000+ position in the array, and I cannot see how. I even did an X-search for all occurrences of "you" but I still couldn't see anything. So it must be something with imode. Does imode use any peculiar places to store information, perhaps in lesson variables?

----- Response 3 of 5

4/12/80 2:33 pm jim trueblood / pso / unidel  
2047 is a very suspicious number. It usually means you've got -1 as an index, but stored in an unsigned segment or something like that.



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----- Response 4 of 5

4/14/80 8:35 pm baum / udps / unidel

That's interesting. I'm using segments in the lesson, but they are all signed, and they are all in the common. My execution error, on the other hand, seems to say that the 2047 is the INDEX of the number, thus:

```
calc    you+2047      $$  what I can't locate, but
                        $$  seems to be happening
        x(you)+0      $$  I DO have this code w/
                        $$  x as a signed segv in
                        $$  common
```

where you is defined as an integer in the lesson space.

----- Response 5 of 5

4/15/80 1:42 pm jim trueblood / pso / unidel

In your example, "you" is used as an index. Zero and 2047 in those examples cannot be called index values.



## Techniques of Programming

----- Note 29 sup/sub

4/13/80 3:46 am jay green / udperuse / unidel

Is there any way where you can use the super and sub key in a keylist command? I get a name error since sup/sub are not function keys. I've heard of them being used and I tried defining constants with their values and that doesn't work either. Can anyone help me? Thanx...

jay

----- Response 1 of 6

4/13/80 3:57 pm jessica / pso / unidel

It certainly doesn't seem to work for me either.  
To clear up a possible misunderstanding, -keylist- works for keys other than function keys. It works for any key that has a name, and super and sub don't seem to have defined key names. The "name" of a letter or number key is that letter or number.

----- Response 2 of 6

4/13/80 7:39 pm jim trueblood / pso / unidel

It seems so far-fetched that I'm not the least bit surprised that neither of you tried it, but guess what:

## Techniques of Programming

keylist supsub,',

Same thing works at -pause- and -keytype-.

----- Response 3 of 6

4/13/80 10:04 pm jay green / udperuse / unidel

Thanx.

----- Response 4 of 6

4/14/80 8:50 am houghton / udps / unidel  
that reeks!

----- Response 5 of 6

4/14/80 11:05 am dan williams / udplato / unidel  
A super-subintelligent way to have it work.

----- Response 6 of 6

4/14/80 2:15 pm houghton / udps / unidel  
well, you could define the keynames using keylist

## Techniques of Programming

----- Note 30 zsystem

4/14/80 3:56 pm walt smith / udauth / unidel  
document/unidel 4/13/80 4:31 pm jim trueblood/pso/unidel  
= Commons which should logically be initialized or partially  
initialized on new systems (includes most halls of fame)  
should contain the name of the system on which the common  
was built, and the program should check that this is the  
current system. If it isn't, the program should initialize  
the system-specific parts of the common.

\*/////

what is "zsystem" set to if you are linked to  
a different system? if it is set to the home system  
as i would imagine, a linked up person could run your  
lesson and zero the common when it shouldn't be zeroed.

----- Response 1 of 3

4/14/80 3:59 pm walt smith / udauth / unidel  
i am thinking if you do something like  
when the common is first initialized set nc1 = zsystem.  
everytime you check to reinit the common, just check  
if zsystem = nc1. will link people mess this up?

----- Response 2 of 3

4/14/80 4:48 pm joe maia / udplato / unidel  
They shouldn't.

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"zsystem" is the system you are running on ... thus you are still running on the same system whether you sign on directly to the system, or sign on through a link (just think of your "home" system being a complex telephone line that you have to go through - it won't affect what you do on the other system).

At least it certainly seems to me that this is the way it should work.

----- Response 3 of 3

4/15/80 12:58 am j wilson / p / unidel

Yes, that's the way it is.



## Techniques of Programming

----- Note 31 nested arrows?

4/14/80 4:24 pm walt smith / udauth / unidel  
on the notesfile sequencer editor:

after you enter the name of the file to  
move \$or\$ add, it gives a second arrow asking for  
the number to move it after. however it doesn't  
erase the first arrow! it doesn't even blink.  
nested arrows!!

how did they do this? i am sure both  
are "real" arrows.

----- Response 1 of 2

4/14/80 4:48 pm walt smith / udauth / unidel  
hmm mike houghton just suggested to me an idea that  
also works. they could both be =inhibit arrow=ed  
with the author actually putting >'s in his =write=  
statements.

i like to think that there is some neat system  
way to nest tutor<sup>(r)</sup> arrows, though

----- Response 2 of 2

4/14/80 5:28 pm jim trueblood / pso / unidel  
Or there could be a -jump- from a unit with one  
arrow to a unitop with another.

## Techniques of Programming

----- Note 32 Nested -use-?

4/14/80 8:41 pm baum / udps / unidel

I was wondering about something. If I were to -use- a lesson that -use-s my lesson back again, is there some kind of check to prevent the -use-s from piling up on top of each other until the system blows up, or do I reach a plateau which gives me an execution error similar to nested -do-s, or do I get a condense error? I know of someone who considered trying this, just to see what would happen...

----- Response 1 of 3

4/14/80 9:42 pm anderer / udplato / unidel

Nested -use-s generate a fatal condense error.

----- Response 2 of 3

4/15/80 11:45 pm dave tall / udcc / unidel

Even now, with multi-lesson uses? (I haven't checked)

----- Response 3 of 3

4/16/80 9:18 am joe maia / udplato / unidel

Still get a fatal condense error for nested -use-.

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----- Note 33     $\mu$ tutor

4/15/80    9:09 pm    sloyer / udhs / unidel

I am now writing a micro-tutor game and  
I am having a bit of difficulty in calculating  
my shots to hit (to tell whether they hit or not).

Can anyone give some advice or help?  
my lesson is udsloyer and the inspect code is open.

ΔORCA  
GREG SLOYER

----- Response 1 of 2

4/16/80    10:06 am    garton / udplato / unidel

Can you be any more specific about the part that is  
giving you trouble?

Also, questions about microtutor programming in particular  
can be put in notesfile =microtut.

----- Response 2 of 2

4/30/80    1:21 pm    baum / udps / unidel

Take a look at the  $\mu$ tutor code in VIPER. Rather than  
branching to different parts of the unit depending on  
the keypress, it calcs the new position as a function  
of the old position, speed, and keypress (also checking

## Techniques of Programming

to insure that the target doesn't move too fast or go off the screen). It may take a bit of study to figure it out if it's new to you, but it works really well. After repositioning the target, if the key last pressed wasn't s, it will branch back to the beginning of the move loop. After that, the code is devoted to scoring. Send me a pnote if you have any questions.



## Techniques of Programming

----- Note 34 Array

4/17/80 11:35 am shawn hart / udauth / unidel

Is there a way to define an array A so that it equals every third consecutive variable? for example: in array A,  $A(1)=n1$ ,  $A(2)=n4$ ,  $A(3)=n7$ ,...ect. I still want to be able to use the array manipulation functions, so I need it to be an array, or can you define a function in some way and still treat it as an array?

Shawn.

----- Response 1 of 7

4/17/80 12:12 pm semprebon / udps / unidel

Could you make it a matrix  $(3 \times n)$  and simply ignore the second and third rows?

----- Response 2 of 7

4/17/80 12:58 pm baum / udps / unidel

You could always define A to be three times as long as you need it, and access it through something like

calc A(3n) ← value

## Techniques of Programming

every time you use it...

----- Response 3 of 7

4/17/80 4:38 pm semprebon / udps / unidel  
I thought my way was better...

----- Response 4 of 7

4/18/80 8:54 am tripp / udps / unidel  
It's not a real array, but you could -define- your variables  
like this:

$$A(xx) = n[3*xx-2]$$

----- Response 5 of 7

4/18/80 10:21 am shawn hart / udauth / unidel  
prognotes / unidel 4/18/80 8:54 am tripp / udps / unidel  
It's not a real array, but you could -define- your variables  
like this:

$$A(xx) = n[3*xx-2]$$

\* \* \* \* \*

You can't use the array manipulation commands  
with this though. I solved the problem by creating a  
normal array and then creating a function like the above  
for every third variable of the array. Then I used a  
doto loop to load the values needed. Thanks for the help

## Techniques of Programming

though!

Shawn.

----- Response 6 of 7

4/18/80 6:00 pm baum / udps / unidel

Why did you want every third variable anyway?

----- Response 7 of 7

4/19/80 12:56 am jim trueblood / pso / unidel

What do you want to name the array?

## Techniques of Programming

----- Note 35 -slide-s

4/17/80 1:23 pm brian dear / udauth / unidel  
I'd like to know if anyone has ever used the -slide- command and its relatives, for showing slides on the terminal. Are the PLATO-IV terminals the only ones capable of showing slides? It seems that slides would be great. How do they get plotted, line by line, or immediately like tv or something?

Has this slide showing capability been ignored, or dropped, or what? It seems as though slides would be great in some lessons.

----- Response 1 of 8

4/17/80 2:29 pm baum / udps / unidel  
I think the -slide- commands refer to the microfiche capabilities built into the PLATOiv terminals in Willard. Since the plasma panel is rather thin, the terminal has an internal lens and mirror system for rear-projection of microfiche onto the screen. I imagine it would look just like that - a slide being simultaneously projected onto the orange plato plato screen.



## Techniques of Programming

----- Response 2 of 8

4/17/80 2:50 pm joe maia / udplato / unidel  
Right.

----- Response 3 of 8

4/17/80 3:04 pm jim trueblood / pso / unidel  
The quality was never that good, though the  
"revised standard CERL format" improved things a bit.  
Other possibilities are being explored: random access  
slide projectors in a shadow box and video disks, to  
name two.

----- Response 4 of 8

4/17/80 3:19 pm m frank / udplato / unidel  
And random access slider projectors rear-projected on  
plasma panels.

----- Response 5 of 8

4/17/80 4:00 pm brian dear / udauth / unidel  
There were some nice terminals at the ADCIS convention that  
combined slides and computer graphics at the same time. I  
think it was the "Goal Systems Computer" or something like  
that.

## Techniques of Programming

----- Response 6 of 8

4/17/80 4:32 pm silver / a / unidel

It was a Magnavox Orion terminal. I don't think it runs PLATO, but we have a couple of groups planning on implementing something like it, using modified ppt's. I am going shopping for random access 35 mm projectors while I am in California.

----- Response 7 of 8

4/18/80 1:50 pm phil smith / udps / unidel

Projection of a standard 35mm slide would make graphic drawings of objects on a slide really easy! For instance, Adam spent a lot of time on his Jamesbury ball valve drawing.

----- Response 8 of 8

4/18/80 3:39 pm silver / a / unidel

You betcha. Also, one can use the slide for a backlight. One draws (or copies) the drawing on a transparent sheet, and places it in front of the screen. One projects a slide (preferably a pretty dark one) behind it. The extra light is enough to make the dark lines show up, but not enough to cause unbearable glare.

There is still some eyestrain, as I am sure Adam can verify.

## Techniques of Programming

We are all looking forward to the implementation of a bitpad graphics editor. It really looks like a winner.

## Techniques of Programming

----- Note 36 coarse $\leftrightarrow$ fine

4/18/80 9:39 am brian dear / udauth / unidel  
I've been looking in aids but with no luck:

Does anyone know a formula that converts a coarse grid  
into fine grid (1 coarse number into 2 fine numbers)?  
And, of course, vice versa.

----- Response 1 of 17

4/18/80 9:48 am markham / udps / unidel  
Look in AIDS under -zfinex- or -zfiney- on the second  
page. Formulas to go both directions are there.

----- Response 2 of 17

4/18/80 9:49 am brian dear / udauth / unidel  
Thanks, just what I was looking for!

----- Response 3 of 17

4/18/80 12:23 pm jessica / pso / unidel  
One thing we can get Monica to fix in AIDS is making  
those formulas easier to find. What are some of the places  
you expected it to be, Brian?



## Techniques of Programming

----- Response 4 of 17

4/18/80 12:32 pm brian dear / udauth / unidel  
I tried DATA → "fine grid" and "coarse grid."  
Never thought of zfinex etc.

----- Response 5 of 17

4/18/80 1:18 pm walt smith / udauth / unidel  
can she make the "copy" key active at the arrow?

----- Response 6 of 17

4/18/80 2:23 pm jessica / pso / unidel  
You mean the main AIDS arrow? If so, I doubt that  
Monica's responsibilities will include making major  
changes in the way AIDS works.

----- Response 7 of 17

4/18/80 2:46 pm walt smith / udauth / unidel  
(yeah, i ment the aids arrow, but i would not call  
inserting 1 =copy= command a "major change")  
walt

## Techniques of Programming

----- Response 8 of 17

4/18/80 3:10 pm m frank / udplato / unidel  
....and a copy buffer and loading it.

----- Response 9 of 17

4/18/80 4:03 pm collings / udplato / unidel  
back to the original question for a moment...  
don't forget that you can use term-calc to get the  
fine grid values by typing zfinex (or y) and then the  
course grid location.

----- Response 10 of 17

4/18/80 6:01 pm baum / udps / unidel  
I think you mean term-cursor.

----- Response 11 of 17

4/18/80 6:16 pm walt smith / udauth / unidel  
no, he ment term-calc<sup>(r)</sup>.

i still don7t consider adding a =storea= and  
a =copy= making a major change, but i don7t think a  
=storea= is necessary. i bet aids<sup>(r)</sup> already =storea=s  
what you type in before hitting it7s million or so  
concept commands.

walt

## Techniques of Programming

----- Response 12 of 17

4/18/80 9:26 pm markham / udps / unidel

AIDS does not work like "normal" TUTOR, it is interpreted.  
I.e. I doubt that it would be all that simple.

----- Response 13 of 17

4/19/80 8:18 am dan williams / udplato / unidel

The text is, but I'll bet the -arrow- is a real arrow. I'd  
guess it's a simple fix. You ought to put that request in  
Public Notes.

----- Response 14 of 17

4/19/80 11:31 am jim trueblood / pso / unidel

Would you want the last thing typed or the last  
AIDS section read?

----- Response 15 of 17

4/21/80 10:16 am lynch / udplato / unidel

Last thing typed would be preferable, but whatever's easiest  
to implement will be fine.

## Techniques of Programming

----- Response 16 of 17

4/29/80 7:48 am dan williams / udplato / unidel  
Aha, AIDS does use an arrow. Quote from -concept- entry:

(Lesson AIDS uses a 2500 word  
vocabulary with -vocabs- and more than 900 -concept-  
commands.)

----- Response 17 of 17

4/29/80 1:46 pm brian dear / udauth / unidel  
Look under "loada" at the bottom of the page in AIDS. It  
gives some more hints as to how the arrow works.



## Techniques of Programming

----- Note 37 dataset sort

4/18/80 1:34 pm jim trueblood / pso / unidel

Without forcing me to go look it up in a reference book, does anybody know a reasonably good algorithm which would sort an entire dataset of entries packed several to the record? Assume that storage is available for a reasonable number of records, but equivalent to a small fraction of the total number of records in the dataset.

----- Response 1 of 1

4/18/80 2:52 pm anderer / udplato / unidel

Assume you can fit K records into ECS at once.

Read in groups of K records and sort them in ECS. You'll then have N runs of K records each. Merge K-1 records into new runs until all N runs have been merged. (The last run may have less than K-1 records on it, but that doesn't matter.) Merge these runs in groups of K-1, etc, until you get 1 final merged run.

You'll need intermediate file space for this - it could just be extra records in the dataset. It'll have to be as large as the dataset you're sorting.

## Techniques of Programming

----- Note 38    zreturn  $\Leftarrow$  ?

4/19/80    12:23 am    semprebon / udperuse / unidel

Is there any easy way to set zreturn to something?

This would be useful in a loop:

```
calc    zreturn  $\Leftarrow$  0
loop    zreturn  $\neq$  -1
.       reserve common
.       return
endloop
```

----- Response 1 of 10

4/19/80    1:05 am    jim trueblood / pso / unidel

```
reserve common
loop    zreturn  $\geq$  0
.       return
.       reserve common
endloop
```

```
loop
.       reserve common
outloop return  $\geq$  0
.       return
endloop
```

## Techniques of Programming

?

----- Response 2 of 10

4/19/80 9:34 am semprebon / udps / unidel

Yeah, but what if you had to do more in the loop.  
You would have to stick it all in a do unit or something.

----- Response 3 of 10

4/19/80 3:38 pm jessica / pso / unidel

In general, you can't use -calc- to set the values  
of system variables. If you need them to have a  
particular value, you have to resort to indirect  
means such as executing code which will result in  
setting the variable to the desired value  
(ie: size 2.2 instead of calc size+2.2).

----- Response 4 of 10

4/19/80 6:12 pm semprebon / udps / unidel

I know you can't use calc...I was complaining  
about the lack of any direct way of modifying zreturn.

## Techniques of Programming

----- Response 5 of 10

4/20/80 2:42 pm jim trueblood / pso / unidel

I agree it would be nice to be able, if not to zero certain system-defined variables, at least to set them to the value "undefined". One other example is "key".

----- Response 6 of 10

4/21/80 9:24 am jessica / pso / unidel

Well, you can always have your program press "funkey", but that's a horribly messy way to do something, and still doesn't solve all cases.

----- Response 7 of 10

4/21/80 2:10 pm dave tall / udcc / unidel

I always thought there were at least two interpretations of that keyname..

----- Response 8 of 10

4/22/80 10:19 am b williams / udps / unidel

To set zreturn equal to zero:

attach zreturn#0



## Techniques of Programming

----- Response 9 of 10

4/22/80 12:21 pm jim trueblood / pso / unidel  
Holy s\*\*t. Just holy s\*\*t.

----- Response 10 of 10

4/22/80 12:53 pm walt smith / udauth / unidel  
prognoses/unidel 4/22/80 10:19 am b williams/udps/unidel  
To set zreturn equal to zero:  
attach zreturn#0  
\*////

don't rely on this, as all someone has to do is to  
create a file in accounts, and this will no longer work.  
walt

but it is 9 characters, so i guess you would have to  
be a system person to create that file name.

## Techniques of Programming

----- Note 39 sequencer

4/22/80 1:31 pm philhower / udhs / unidel

Is there any way to -jumpout- right to the notesfile  
sequencer???

It would be a welcome addition to udphlwr.

Bob

----- Response 1 of 21

4/22/80 4:17 pm marks / udps / unidel

HA! If only you could do that! If several of you old  
timers remember, I wrote a cycler when the new one came in  
and at the time I was told that there is no way to get to  
the sequencer. You might be able to do a -jumpout notes-.

Cheinan

----- Response 2 of 21

4/22/80 4:19 pm m frank / udplato / unidel

-jumpout notes- doesn't work.

## Techniques of Programming

----- Response 3 of 21

4/22/80 4:38 pm walt smith / udauth / unidel  
right, and don't try playing around with two arg-jumpouts  
to lesson notes, as strange things happen.  
walt

----- Response 4 of 21

4/23/80 2:38 pm philhower / udhs / unidel  
Like what??

----- Response 5 of 21

4/23/80 3:16 pm m frank / udplato / unidel  
Just errors....

----- Response 6 of 21

4/23/80 3:36 pm marks / udps / unidel  
FATAL CONDENSE ERROR

Jumpout Code Word Mismatch

## Techniques of Programming

Press BACK

----- Response 7 of 21

4/23/80 3:43 pm walt smith / udauth / unidel  
they do not have a jumpout codeword in lesson "notes"  
(i guess this is because each notesfile has to do a  
jumpout return,return)

the errors had something to do with either a  
unit not found in the two arg jumpout, or something  
weird happing because i had a 2 arg jumpout in  
the ieu of my lesson, and lesson notes had a jumpout  
zlesson,zunit or something weird like that.

walt

\*////

note: jumping out to a unit that doesn't exist in  
lesson =notes= causes an exec error in lesson  
=notes=, not your own lesson. doing that is  
probably frowned upon by the system progs.



## Techniques of Programming

----- Response 8 of 21

4/23/88 5:51 pm jim trueblood / pso / unidel

There's no jumpout codeword because it's perfectly legitimate to do a -jumpout- to unit "datetime". That this isn't in AIDS is due only to an oversight, and I believe it has been corrected on CERL.

----- Response 9 of 21

4/23/88 6:01 pm jim trueblood / pso / unidel

To do a -jumpout- to a notefile with the date and time pre-set (as it would be if you were writing your own sequencer) you put the date in n2 (in the format returned by the -date- command) and the time in n3 (in the format returned by the -clock- command) and then jumpout to unit "datetime" of the notefile in question.

Yes, this should use argumented -jumpout-. Don't ask me why it doesn't.

----- Response 10 of 21

4/23/88 6:06 pm walt smith / udauth / unidel

(but that is to the name of the notesfile, not lesson "notes". is that different?)

## Techniques of Programming

----- Response 11 of 21

4/24/80 9:17 am fortner / p / unidel

Look you bozos: I am not amused by having to wade thru  
tons of your exec error notes trying every unit name  
under the sun. Stop it now, ok?

----- Response 12 of 21

4/24/80 9:30 am jessica / pso / unidel

Any two-argument jumpout which refers to a unit that  
does not exist will cause an execution error in the  
lesson jumped to. Of course if the jumpout codewords  
don't match, you get a fatal error instead.

----- Response 13 of 21

4/24/80 10:32 am andrews / udcc / unidel

Let us look and see the names that DO exist.

----- Response 14 of 21

4/24/80 12:08 pm houghton / udps / unidel

Why? You have no need to know the names of the units,  
except "datetime"...besides, it is none of your business.

## Techniques of Programming

----- Response 15 of 21

4/24/80 12:19 pm b williams / udps / unidel  
prognotes/unidel 4/23/80 6:01 pm jim trueblood/ps0/unidel

To do a -jumpout- to a notefile with the date and time pre-set (as it would be if you were writing your own sequencer) you put the date in n2 (in the format returned by the -date- command) and the time in n3 (in the format returned by the -clock- command) and then jumpout to unit "datetime" of the notefile in question.

Yes, this should use argumented -jumpout-. Don't ask me why it doesn't.

>----<

This seems to imply that notes store the alpha date and time. I was previously lead to believe that they just store the number generated by the -day- command, which seems like a much better way to do it.

----- Response 16 of 21

4/24/80 12:26 pm jim trueblood / ps0 / unidel  
prognotes / unidel 4/24/80 9:30 am jessica / ps0 / unidel  
Any two-argument jumpout which refers to a unit that does not exist will cause an execution error in the lesson jumped to. Of course if the jumpout codewords don't match, you get a fatal error instead.



## Techniques of Programming

+ + +

I got the impression from Brand that a few more  
of these execution errors could also turn out to be fatal.

----- Response 17 of 21

4/24/80 12:40 pm brian dear / udauth / unidel  
prognoses/unidel 4/24/80 12:26 pm jim trueblood/psd/unidel

I got the impression from Brand that a few more  
of these execution errors could also turn out to be fatal.

\*-----

For the condenser or for the programmer?

----- Response 18 of 21

4/24/80 1:57 pm jim trueblood / psd / unidel  
For the programmer, of course!

----- Response 19 of 21

4/28/80 9:13 pm philhower / udhs / unidel  
Hmmm, tried setting the values and jumping out.

Each time I got to the menu for the notesfile



## Techniques of Programming

(to the same point) is there any way to get to the actual note al la sequencer??

----- Response 20 of 21

4/29/88 9:19 am joe maia / udplato / unidel  
Most likely there is not. I would assume that as you -jumpout- to the notesfile, any variables you could possibly set beforehand to do what you want will be initialized in the unit you -jumpout- to.

----- Response 21 of 21

4/29/88 3:01 pm marks / udps / unidel  
A jumpout to and from a notefile leaves all student variables intact.

## Techniques of Programming

----- Note 40 clean-up

4/24/80 12:20 pm houghton / udps / unidel  
userlnotes/unidel 4/24/80 10:21 am andrews/udcc/unidel  
Just readonlyise whoever it was that shift-stopped  
in the middle of compressing (though I must admit that  
it is pretty poor software that will clobber the file  
when interrupted and that I could write better.)

\*----

Tanner,

The compressor is a garbage collector...and it doesn't make  
a copy of the file before it starts...given those  
constraints, I don't think you could do much better. How  
would you preserve a 13 part file which is 80% full?

----- Response 1 of 25

4/24/80 12:30 pm jim trueblood / pso / unidel  
Awfully big of you to "admit" you could do better, TA.

----- Response 2 of 25

4/25/80 10:23 am andrews / udcc / unidel  
If they can't learn the prog to build a temp file, then  
they should be able to write a one-pass cruncher that  
is much safer to use than the current system.

## Techniques of Programming

----- Response 3 of 25

4/25/80 11:06 am anderer / udplato / unidel  
"learn the prog"? Is that like "learn the english"?

PLATO doesn't support file creation under program control except for the "accounts" package. Adding a temporary file would be a major change.

Instead of asserting that a better 1-pass cruncher should be written, tell us how it could be written. Generalities aren't very informative.

----- Response 4 of 25

4/25/80 11:59 am jim trueblood / pso / unidel  
Well, I suppose if you didn't mind making the thing several times slower than it is now, you could compress from the end to the beginning. Every time you saved a little chunk of space, though, you'd be re-transferring much of the data you'd already transferred and making another loop from your current position to the end of the pointers to correct them.

----- Response 5 of 25

4/25/80 11:00 pm andrews / udcc / unidel  
Do it the other way around.  
Start at the beginning. Move down first real stuff



## Techniques of Programming

into first space, second real goodstuff (not waste space) right after the first, and so on. As you do that, update the directory (as you move the notes). Don't do any sort on them; that won't save space. If you do it this way, you do it about as fast as is possible, and you also have the advantage that if some buffoon kills it while running the most htat can be lost is one note or response as the dir is updated for everything else that is moved, and not updated for that stuff that is not moved.

Also, it is just one pass.

And, it is safer than the current system, and probab a little faster (how much depends on how they currently do it).

That's how I would do it better than it is done now.

Questions, anyone?

----- Response 6 of 25

4/26/88 12:06 am dave tall / udcc / unidel

What do you do when the next note in line  
won't fit into the space you have open?

----- Response 7 of 25

4/26/88 11:18 am gellens / udcc / unidel

It seems to me that the most sensible way (safest and easiest) would be to start at the top, copying every good note into a new file, then removing the old file. Except for the reluctance of cdc to "support"



## Techniques of Programming

file creation at this level, it seems ideal.

----- Response 8 of 25

4/28/80 11:06 am andrews / udcc / unidel

Yes, Randall's way is the most sensible way to do things. Dave -- your situation can never happen. The note will always fit into the space that is present (We are just shifting it down a few words; the end of it in its new location might be where it started before).

----- Response 9 of 25

4/28/80 11:20 am joe maia / udplato / unidel

Tanner, even the loss of one note is not good enough; there would still have to be a "do not press SHIFT-STOP" warning for your algorithm as well. The way it is presently done is probably the fastest method they could come up with. They no doubt weighed the pros and cons of various methods and decided, since any way they did it would not be SHIFT-STOP proof, that being vulnerable for the shortest length of time would be the best.

How do you know how the directory is set up? What makes you think that all notes are linked through the directory? It could very well be that the only things that reside in the directory are 1) the director's message, 2) pointers to the main notes, and 3) titles of the main notes. In this instance your algorithm could loose not just one or two notes but all the responses to a main note (since the

## Techniques of Programming

link-list pointers for responses would be stored with the notes).

----- Response 10 of 25

4/28/80 11:31 am joe maia / udplato / unidel  
prognotes/unidel 4/28/80 11:06 am andrews/udcc/unidel  
Yes, Randall's way is the most sensible way to do things.  
Dave -- your situation can never happen. The note will  
always fit into the space that is present (We are just  
shifting it down a few words; the end of it in its new  
location might be where it started before).

\*\*\*

Oh, you are going from note to note AND THEN finding its  
entry in the directory. Aren't you assuming quite a lot  
when you assume you can know when a note starts out (it  
might not be one-note-per-record)?

Assuming you can find each note, what if the notes are  
not doubly linked? Then, for each note you come across  
you have to search the whole directory for where it is  
located. Your algorithm will be very slow!

----- Response 11 of 25

4/28/80 3:41 pm baum / udps / unidel  
I think Tanner's method assumes that the notes are stored  
in the order in which they appear in the notesfile, which

## Techniques of Programming

would make it very difficult for someone to respond to a note at the beginning of a very large file.

Not knowing anything about the way PLATO's notes are actually set up, I would venture to say that they are probably stored in the order in which they are written, with notes and responses all intermixed. The directory would then hold a list of the position of each main note in the actual memory, and each note or response would have a pointer that pointed to the next response and one that pointed to the last response.

This way, an added note would go into the first available empty word in the file, and somewhere a pointer would be changed to indicate where it was.

(cont) →

----- Response 12 of 25

4/28/80 3:47 pm baum / udps / unidel

Now, when a note is "deleted" by a file director, the pointers would be rearranged so as to bypass the note, and perhaps the space the note ate up would be zeroed. After a while, the file would be full, mostly with the zeroed notes-that-were-deleted mixed in with the real notes. A compression would be in order.

Now then, if anyone can think of a way to move everything down into the spaces where the deleted notes were, and



## Techniques of Programming

change the accompanying pointers along the way, and all in one pass no less, please let me know. I personally don't think there is an efficient way to do this in one pass... It's just one of those things.

Sorry, Tanner.

----- Response 13 of 25

4/28/80 5:59 pm gellens / udcc / unidel

On the Burroughs' notes program, which is patterned after plato's, the directory has one slot per main note, containing pertinent information on the note, including it's location and length, and pointers to the first and last respons (if any), and pointers to the predeccesor and successor notes. (Ends of chains have negative pointers to the other end usualy.) Each response has a header with similiar info. Notes are stored starting at the top of the data space and working down, while responses are stored starting at the bottom and working up.

During compression, each note and all it's responses are copied one by one into a new file, as if the file was a reader stepping through the file. Then the titles of the files are swapped, and the old file is removed. This minimizes damage from interrupted compression.



## Techniques of Programming

----- Response 14 of 25

4/28/80 6:03 pm dave tall / udoc / unidel  
JD didn't do the directory the same way, Randall.

----- Response 15 of 25

4/28/80 11:19 pm gellens / udoc / unidel  
How does plato do the directory, then?

----- Response 16 of 25

4/29/80 4:43 pm andrews / udoc / unidel  
I have checked, and found that responses do each cause one word of directory space to be eaten, so I would imagine that there is a pointer to each response in the directory. My algorithm doesn't care in what order the notes are stored. All it will do is move them down to lower-addressed free addresses in the file. After it moves a note or response (doesn't care where in file it is) it will update the pointer in the directory to that note or response. The maximum loss this way is one response. This uses one pass. This will be faster than any two-pass system can be. This does not care in what order the stuff is stored. Sorry, Mr. Baum. Any further questions?

## Techniques of Programming

----- Response 17 of 25

4/29/80 4:57 pm dave tall / udcc / unidel

Yes. I still don't understand how you are going to manage space. Are you allowing the maximum space for all notes (a tremendous waste), using a fixed parcel size <128 words (a moderate waste), or using exactly the number of words the note requires for storage?

If it is one of the last two, what do you do when the next note you have to move is too large for the space freed up for it?

----- Response 18 of 25

4/29/80 4:59 pm houghton / udps / unidel

ummm...Tanner, you seem to assume that the compressor sorts the notes...this is not at all necessary...are you familiar with the technique of garbage collection with respect to linked lists? Short of copying into a new file, this is probably the best way to do it...

Phoenix

----- Response 19 of 25

4/29/80 9:53 pm anderer / udplato / unidel

The idea is to create a routine that will not loose any notes or responses.

## Techniques of Programming

None of the suggestions so far seem to do this. They would all also be slowed somewhat by the requirement that the directory (a common) be written to disk after each move. Ugh.

----- Response 20 of 25

4/30/80 10:07 am b williams / udps / unidel  
prognotes/unidel 4/29/80 4:57 pm dave tall/udcc/unidel

Yes. I still don't understand how you are going to manage space. Are you allowing the maximum space for all notes (a tremendous waste), using a fixed parcel size <120 words (a moderate waste), or using exactly the number of words the note requires for storage?

If it is one of the last two, what do you do when the next note you have to move is too large for the space freed up for it?

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Given a buffer of at least 240 words of storage, i don't see any problem with this. You take each note and pack it against the end of the last note, and update the pointers. As tanner says, this will lose at most one note, which although is not perfect, is certainly preferable to the present setup. Thus tanner has improved it as he claimed!



## Techniques of Programming

----- Response 21 of 25

4/30/80	11:04 am	joe maia / udplato / unidel
directory		notes space
.		.
.		. (other notes)
.		.
5 13 (del)		13 (note using 10 words)
6 77		23 (note using 8 words)
7 23		.
.		. (other notes)
.		.
.		77 (note using 50 words)

Suppose for argument's sake that the directory is set up as above. Suppose also that notes 1 through 5 have been "deleted". You are therefore ready to move your first "undeleted" note, note 6 (pointing to location 77), and suppose it should be moved to location 1.

But there are other notes that are still good in the space that will be needed when moving this 50 word note to its new location. This problem, Tanner, you have not answered.

----- Response 22 of 25

4/30/80	11:12 am	joe maia / udplato / unidel
On another point:		



## Techniques of Programming

I still say that more than one note can be lost by Tanner's algorithm. Even assuming that responses are linked in the directory, if the first response is lost then all the other responses after that one are effectively lost also. As Tanner says, 1 word is used in the directory for each response. That suggests to me that the responses are simply link-listed to one another; which means that losing one link will blow the rest away.

----- Response 23 of 25

4/30/80 11:19 am tweed / udps / unidel

You're missing the point -- Tanner! is not sorting the notes to compress them. They would still be stored in the same order that they were originally in the "note space", just with all the gaps removed.

In other words, the file would look like this after compression:

directory	notes space
1 55 (original note 6)	1 (note using 8 words)
2 1 (original note 7)	. (other notes)
.	.
.	55 (note using 50 words)
.	.

This method requires one pass through the directory to see which spaces are used/unused, and then a single pass through the file itself to do the actual compression.

## Techniques of Programming

----- Response 24 of 25

4/30/80 11:32 am baum / udps / unidel

Assuming that deleted notes are truly "zeroed" and not removed from the directory by a rearrangement of pointers...

If there any way to find out exactly how a file compression works? Or is it one of those things we can't look at?

----- Response 25 of 25

4/30/80 12:02 pm andrews / udcc / unidel

If we use one word in the directory, then the responses shouldn't be linked; that word should simply point to the start of the response. So if that response gets blown away, then the rest are ok, as their pointers (in the dir) are NOT TOUCHED. The max loss is one response.

If a note gets blown away, then the responses are still intact, just the pointer to the main note is lost.

Once more, now, I DO NOT sort the notes in the file.

I simply move them down into free space. There is no way that there can not be enough space for me to

move the note into; the note itself provides enough space!

I may overwrite the old note beginning location with the new note end location, if the free space is half of a note's worth. No matter, the new note start (half a note forward) is where the directory points to anyway, and where the whole copied note starts.

# Techniques of Programming

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